

## ORAL HYGIENE DEVICE, ESPECIALLY A TOOTHBRUSH

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### Abstract

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The invention relates to an oral hygiene device, especially a toothbrush. The device consists of a handle (1) and a cleaning head (10) which is provided at the end of said handle and which supports an essentially flexible material (2) used for oral and dental hygiene. This material (2) is especially detachably fixed to the cleaning head.

## Description

"mouth space hygiene equipment, in particular toothbrush" the invention concerns mouth space hygiene equipment, in particular a toothbrush, consisting of a handle and a cleaning head planned at the handle end. Toothbrushes, as initially described, are sufficiently well-known as the subject of the daily use. At the handle, which is seized by the hand, a cleaning head, for example equipped with bristles, is intended at its handle end, whereby the handle with the cleaning head is importable into the mouth and serves for cleaning the teeth. With the well-known toothbrushes it is unfavorable that the cleaning head wears due to mechanical load and becomes useless and is not hygienic due to the age any longer. This leads regularly for the change of the entire toothbrush, whereby the handle could be actually still used. To be cleaned it often of toothbrushes without itself with the scope of protection to these devices serving for the cleaning of the teeth to limit to want spoken rather covers the invention general mouth space hygiene equipment, both in addition suitably is the teeth, and other ranges in the mouth area. Also the term hygiene equipment is to be laid out not regarding a particularly sterile cleaning, but both in view to a cleaning and for removing from dirt or deposits serving to understand in the same way. The before-described mouth space hygiene devices, for example toothbrushes, are to be cleaned thereby not been suitable the sensitive mouth mucous membrane effectively. The employment of the bristles on the sensitive mucous membrane, in particular with injuries of the mucous membrane, is very painful. The invention made it its duty to develop mouth space hygiene equipment going by that its employment is not only limited to the dental care. To the solution the invention goes to this task out from mouth space hygiene equipment, how initially described, whereby is suggested, that the cleaning head of one carries serving, essentially flexible material, which is solvable fastened to the cleaning head in particular for the mouth space hygiene and/or tooth hygiene. According to invention it is reached by the suggestion that with that in principle well-known style of a toothbrush a flexible material can be inserted in the mouth area around not only the tooth surfaces to clean, but also sensitive Haut-oder mucous membrane surfaces. About is forwards seen to fasten the flexible material to the cleaning head rigidly whereby then the whole equipment is konzipiert again as Wegwerf article or it is possible, the flexible material at the cleaning head, that introduced to the mouth area to arrange solvable and/or replaceable. Straight ones for a replaceable arrangement of the flexible material at the cleaning head are conceivable different strategies. On the one hand it is possible to interlock the flexible material at the cleaning head to bolt to rivet, to rest, to stick or sew. It is also possible to plan one stretch spann-oder for lock washer which is trained as rubber band or such a thing for example, whereby the flexible material is clamped in this case by or two rings on the handle end. The use of lock washers permits the exchange of the used up flexible material in simple way. The flexible material can be put on thereby also over the handle and/or cleaning head. Also a Klettverbund offers a simple and fast connecting possible keit. Favorable way exhibits the cleaning head likewise a unterfuetterung with flexible material. In a preferential arrangement of the invention it is suggested that the cleaning head at the toothbrush essentially consists of two elements, which are connected to compression joint or such a thing with one put steck-oder and in the connection the tooth hygiene serving, essentially flexible material or records employment. The parts, which form the elements, preferably consist of plastic and can particularly simply be manufactured, for example as

Spritzgußteile. By put steck-oder the compression joint also no chemical connecting devices are necessary such as adhesives, which would be sometimes health or hygienically precarious. With the fact it is possible that put steck-oder the compression joint is so trained that the flexible material held of it is fastened with a sufficient retaining strength. It is possible that the assigned flexible Materialien, if these used up or worn is can be exchanged, without replacing thereby the whole toothbrush. Apart from the employment of a flexible material, which directly to the cleaning head to fasten are, it is possible in the same way in addition, to plan an employment the flexible material carries for which and for his part, for example by an appropriate snap connection or a mounting flange or such a thing at the element and/or the cleaning head is fastenable. It is intended with the fact that the cleaning head is connected with the handle einsteckig. It is alternative in addition, possible to out-arrange the cleaning head and/or an element of the cleaning head of the handle solvable and/or exchangeably at these fastenable. It is also possible, both elements, to out-arrange kit similar which form together the cleaning head and which cleaning head then at the handle end is fastenable. By the compression joint between the elements or the element and the cleaning head a very effective attachment of the flexible Materialien is possible in simple way. With the preferential execution form of the invention the cleaning head exhibits circle. The essentially circular arrangement of the cleaning head has advantages regarding the avoidance of sharp edges or corners. Also the assembly of the cleaning head, in particular if the flexible material between two elements is to be clamped, is supported by a circular form. In a preferential arrangement of the invention it is intended that the cleaning head consists of two essentially identical half elements, which exhibit retaining means for the flexible material, whereby the retaining elements clamp the flexible material in the plugged together condition. This arrangement has the advantage that only one tool according to the arrangement of the half element are created muB. two half elements manufactured with this tools, are with one put steck-oder compression joint connectable with one another. For example it is intended that the plugged together half elements exhibit for instance the form of a cylinder or a crown and between itself through inward out-struggle-end thorns as Halteelemente the flexible material hold. It is according to invention intended that put steck-oder the compression joint is solvable. By the possibility that the elements are again apart-built, thus solvable, it is possible it that the flexible material is taken out and exchanged. In addition, it is possible in a variant of the invention to out-arrange Steck- und compression joint unsolvable in order to fix a flexible material in such a manner by the large klemmkraefte that this is only very with difficulty removable. Also different forms, like oval or angular remarks, favorably proved than. With a further execution form of the invention the first element of the cleaning head consists of a plate, on whose lower surface for example an adapter is intended for connecting with the handle. A second element, which is likewise essentially plattenfoermig, exhibits an edge, which spreads in the customs position the first element. Both elements are for example essentially circular, whereby the edge of the second element as well as the edge of the first element forms the compression joint, which holds the flexible material. The arrangement of the invention suggested here results in advantages when the assembling of the cleaning head, there the assembly for example in an accordingly out-arranging form and/or. Device takes place. In the functional condition the material the surface of the second element and is covered then used in such a way for tooth

/Mundraummreinigung. It is intended for example to use flexible material which is relatively soft. A pleasant effect on the teeth in addition, on the sensitive mouth mucous membranes is reached by a soft arrangement. The effect can be improved by a unterfuetterung with foam material or a flexible layer or such a thing, whereby then the foam material lies between the plate of the second element and the flexible material. The edge of the first element, just as the edge of the second element, become favorable-proves rounded off and/or tapered, so that the textile material is not hurt or enters. With the help of the flexible material liquids can be taken up such as mouth water, medicines, Mundraumpflege mundraumpflege-oder reinigungsfluessigkeiten or such a thing and be applied on the teeth, the gums or also other surfaces in the mouth area for example. With a preferential execution form of the invention the cleaning head at the handle is exchangeably arranged. For example a kind ball joint or hinge joint is applicable, so that the head on the handle is articulated stored. In addition, it is possible to plan a sliding compression joint like a dove tail joint whereby the cleaning head is pushed laterally onto the handle. In a further variant of the invention it is intended that the cleaning head is firmly connected with the handle, whereby also the handle is mirror-image compound from two essentially identical parts and excludes between itself in the range of the cleaning head the flexible material. With an execution form of the invention the flexible material carries or the employment tooth bristles. It is intended for example that on the flexible material for example textile or tooth bristles existing made of plastic are located, which permit a better mechanical cleaning. In a variant of the invention it is intended that naturally an employment equipped with tooth bristles in conventional way is applicable into the cleaning head and so the variability increases clearly. With the preferential execution form of the invention the cleaning head carries a micro fiber cloth, that like above beschriebenim cleaning head jammed or festgesteckt is. With the help of such a micro fiber cloth a tooth cleaning without further additives can take place such as tooth paste and such a thing. The micro fiber cloth remains for a long time hygienically perfect and must be cleaned only with water. As Microfasertuch here in particular a cloth is planned, which is out-arranged for example with bolt schlingen-oder florartigen Fasernuebersaenden and whereby the fibers for example of PP, polyester, Polyacryl, polypropylene, Polyurethan, Polyvinylchlorid, polystyrene or Polysulfon or mixtures of it to consist. Usual materials exhibit a middle fiber diameter, which is to 500 with monofilen fibers between 1  $\mu\text{m}$  and  $\mu\text{m}$  and multifilen fibers in the range between 10  $\mu\text{m}$  and 1000  $\mu\text{m}$ . The employment of the Microfasertuches in the dentures cleaning permits the saving of tooth paste or other abrading means, since fiber by measurers is so selected, in order to dive into the roughness of the teeth and remove the dirt. At the same time the Microfasertuch can be used to transport liquids as Zahnwaesser and so on to the teeth or to the mucous membranes. Also different flexible materials can be used such as polishing cloths and such a thing in the cleaning head, whereby a further advantage of the invention is in the fact that to a handle different cleaning heads for different purposes, like foremen, can being fastened flashes, care and cleaning. Also the waste is reduced by the simple arrangement of the cleaning head at the same time when changing the cleaning head and a large variability with the mouth hygiene is reached. It is also possible to apply on the flexible material abrasive pastes or solutions around an appropriate Reinigungsoder polishing effect to reach. In further arrangement of the invention it is possible to touch down for example of tools of the care of interdental spaces than

cleaning head on the handle whereby also this element exhibits the same connection as the cleaning head for tooth bristles or micro fiber cloth. In this way the space requirement is completely substantially reduced, since only individual cleaning heads are necessary, which are plug-on on the same handle in each case. By the articulated execution with an execution form of the invention all ranges of the mouth can be reached, whereby the toothbrush according to invention is so trained that the cleaning head is tiltable and/or articulated rotably arranged in a certain solid angle segment at the handle. Thus it is also possible to stop the orientation of the cleaning head bezueg lich or for the surface which can be maintained which can be cleaned in the mouth. In a further arrangement of the invention it was found that the suggested mouth space hygiene equipment for it the teeth cannot only be also used to clean, but it serves also to clean the mouth space inner surfaces. In a variant of the invention with the fact it was also found that the use of Microfasertuechern results in as before-described in the case of the mouth space hygiene, in particular within the range of the tongue cleaning surprisingly good results. This is in particular because of the fact that the surface of the tongue is relatively rough and itself in this dirt, in addition, bacteria can determine etc.. The arrangement of the Microfasertuches, as a while ago it described permits in particular a very thorough cleaning to the tongue, whereby on the tongue a very pleasant feeling is reached. In particular by the employment of the described, mouth space hygiene equipment according to invention also a deep cleaning of the tongue is reached, since also rear ranges of the tongue are problem-free attainable due to the handle length. In the design the invention is schematically represented. Show: Fig. 1 a side view of a handle of a toothbrush in accordance with the Erfindung, Fig. 2 a plan view after Fig. 1, Fig. 3 in an increased yardstick a detail the tooth according to invention brushes, Fig. 4 in a side view the Reini gungskopf the toothbrush according to invention, Fig. 5 a plan view after Fig. 4, Fig. 6 a sectional view of a preferential cleaning head in accordance with the invention and Fig. 7 an assembly fixture in accordance with the invention. In Fig. 1 the toothbrush according to invention is shown. It consists of a handle 1, which exhibits a connection element 11 within the upper range Stielendes 10, at which the cleaning head 2 is fastenable. The handle end of 10 is bent here in relation to the middle range 13 of the handle 1 something, in order to achieve a better ergonomic arrangement. The connection element 11 is increased in Fig. 3 again represented. It concerns an essentially ball-like arrangement, which attaches 15 at the handle end 10 with a foot. The diameter of the foot 15 is here smaller than the diameter of the ball 16, whereby a certain Hinterschneidung results, which is straight for fastening the cleaning head 2 on this ball 16 of advantage. For a better handling it is intended that on the handle 1 a shaping 12 is located in the middle range 13 of the handle 1. The range at the handle end of 10, which carries the notice element 11, for example the ball 16, is essentially approximately trained in accordance with the plan view (Fig. 2). This range is inserted into the mouth, why this roundness 14 does not form the danger of sharp edges and such a thing, that otherwise the mouth interior could be hurt. The cleaning head 2 is represented in Fig. 4 and 5 and consists in this arrangement for example of two half elements 20,21. These half elements are identically, thus to the same injection mold manufactured. In the plan view (Fig. 5) it results that the half elements essentially exhibit 20.21 semi-circles 22 and carries these some or several points 23 before-rising up inward. In Fig. 4 it is suggested on average that in the connection pieces, thus the to each other turned half elements 20.21 (their

mating surface is marked by 24) thorns 25 are intended, which result in into corresponding openings 26 respectively of the different element in-seized and, if these are imported, an indissoluble connection of the two half elements 20.21 along the mating surface 24. The elements koen nen in principle to be again solved only if they are destroyed. As a result of this pushing the two half elements 20.21 together along the thorn drilling connection 25.26 an essentially circular interior 27 arises, in which from the two half elements 20.21 points 23 inward project. This circular area 27 can be out-arranged however according to the arrangement of the half elements 20.21 also in every other bliebigen form (squarely, rectangular, elypsoidisch and so on). The points 23 serve to hold in this area 27 put in bodies. In the plugged together condition this results in a crown-like cleaning head 2, whereby the flexible material is arranged in the interior of the crown. In an arrangement according to invention it is intended that the cleaning head carries 2 a Microfasertuch. This Microfasertuch is inserted mushroom-like into the area 27, as long as the two half elements 20.21 are not yet firmly connected with one another. Then the two half elements 20.21 are assembled, crimpings the points 23 the cloth (here not shown) together and become wedged in the fact in such a manner that the cloth is not to be removed no more from the cleaning head 2. The cleaning head 2 exhibits a nearly spherical recess 29 on its lower surface (on the page 28 turned away from the area 27), which is in such a manner to the ball 16 adapted that engages these holding into the recess 29. Here the material of the cleaning head 2 exhibits a such elasticity that the recess is invertable 29 over the ball 16, without breaking thereby the cleaning head 2. Such a ball joint-like group of the cleaning head 2 on the handle 1 develops. As a result of the appropriate geometrical arrangement of the lower surface 28 and the surface 17 within the range of the ball 16 of the handle 1, corresponding with it, the possible angle of inclination and/or the solid angle segment arises, around which the cleaning head is mobile 2 on the handle 1. This amounts to for example approx. 20, prefers however 16. In the Fig. 6 the preferential execution form is represented. The first element 3 carries thereby on its lower surface 30 the adapter 31 for the connection to the handle, whereby the adapter 31 can be for example a spherical recess 29, which can be set on the ball 16 at the handle end 10. In the representation shown of the Fig. 6 the top side 33 of the element 3 exhibits a recess 34. In addition, the top side 33 can be plattenfoermig trained. The second element 4 holds the flexible material 6, thus for example a micro fiber cloth 60, by wedging. Wedging arises in the case of it as a result of the edge 40 of the second element 4 and the edge 32 of the first element 3, which work against each other, form the connection 5 and clamp between itself the flexible material 6. The flexible material 6 exhibits thereby a Uberstand 61 at the lower surface 42 of the second element 4. In order to exclude an injury of the flexible Materiales 6, the edge 32 of the first element 3 and the edge 40 of the second element 4 are easily rounded off. On the surface 41 of the second element 4 a schaumstoffauflage 62 is intended in further arrangement of the invention, which serves 6 for the unterfuetterung and Abpolsterung of the flexible Materiales. Also different springy materials can be used. For installing the flexible Materiales 6 and/or the micro fiber cloth 60 on the elements 3.4 and/or 20.21 the assembly fixture 7, which is represented in the Fig. 7, is intended. The assembly takes place with the fact in such a manner that first the micro fiber cloth 60 into the device 7 is inserted, and then the appropriate elements are presented on the micro fiber cloth 60. Then the base is pressed into the turned cover. In order to reach that the micro fiber cloth manages 60 inward, the

bulge 70 is intended, so that the micro fiber cloth 60 is blocked by the base against the cover when squeezing together. Apart from the use of flexible material it is also possible that an employment is held by the elements, and the employment for example is covered with a Microfasertuch or such a thing. Requirements submitted now with the registration and later are attempts for formulation without Praejudiz for the achievement of large protection. The back relations stated in the dependent requirements refers to the further training of the the subject of the principal claim by the characteristics of the respective unteransprueche. However these are not as a renouncement of the achievement of an independent to understand gegenstaendlichen protection for the characteristics of the backreferred unteransprueche. Characteristics, which were revealed so far only in the description, can be stressed in the course of the procedure as of invention-substantial meaning, for example for the demarcation of the state of the art.

## Claims

Patent claims: 1. Mouth space hygiene equipment, in particular toothbrush, consisting of a handle and a cleaning head, by, the fact planned at the handle end, characterized that the cleaning head (2) one carries Mundraum-beziehungsweise tooth hygiene serving, essentially flexible material, which to the cleaning head (2) are solvable fastened in particular.

2. For mouth space hygiene equipment, in particular according to requirement 1, by it characterized that the cleaning head (2) consists essentially at least of two elements (20,21,3,4), by one put steck-oder the compression joint or such a thing connected are and in the connection (5) Mundraum-beziehungsweise tooth hygiene serving, essentially flexible material (6) or an employment hold.

3. Mouth space hygiene equipment, after or several of the preceding requirements, thereby characterized, daLS the cleaning head (2) einstueckig connected with the handle is solvable or the cleaning head (2) and/or an element of the cleaning head of the handle and/or exchangeably at this fastenable is.

4. Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that the cleaning head (2) circle exhibits or oblong, oval or is angularly out-arranged.

5. Mouth space hygiene equipment, after or several of the preceding requirements, thereby characterized that the flexible material (6) at the cleaning head (2) interlocked, bolted, riveted, rests, stuck together or sewn is or by Spann-beziehungsweise lock washer or Klettverbund is held.

6. Mouth space hygiene equipment, after or several of the preceding requirements, thereby characterized that the cleaning head (2) consists of two essentially identical retaining elements (20,21), the retaining means (23) for the flexible material (6) exhibit, whereby the retaining elements clamp the flexible material in the plugged together condition.

7. Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that the cleaning head (2) is crown-like ausgebildet and the flexible material (6) is arranged in the interior of the crown.

8. Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that the first element (3) of the Reingungskopfes (2) consists of a plate and the second element (4) is essentially likewise plattenfoermig and exhibits an edge

(40), which spreads the first element (3) and which holds edge (40) of the second element (3) the flexible material (6) wedging.

9. Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that under the flexible material a flexible layer (62) is arranged, for example from foam material.

10. Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that put steck-oder the compression joint is solvable (5).

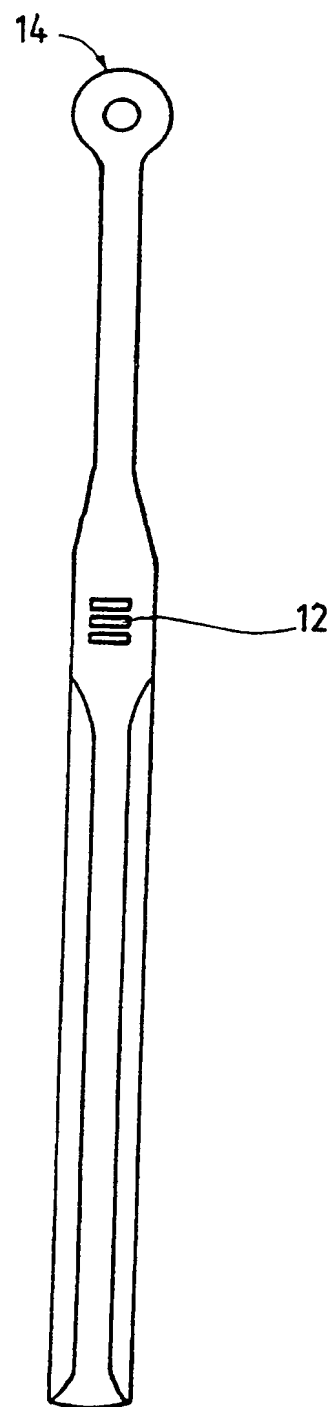
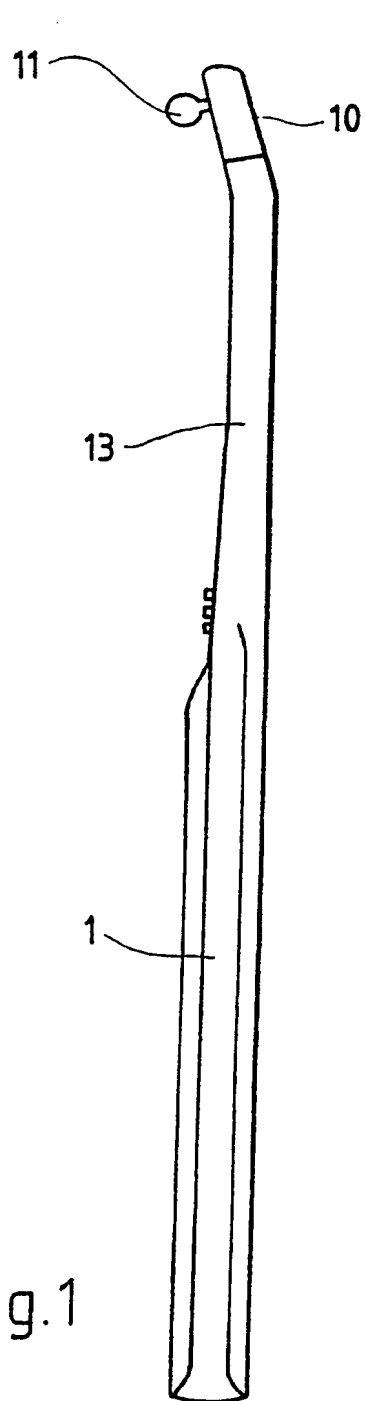
11 Mouth space hygiene equipment, after or several of the preceding requirements, by the fact characterized that the cleaning head (2) on the handle (1) is articulated, exchangeably stored or solvable in one push compression joint is held.

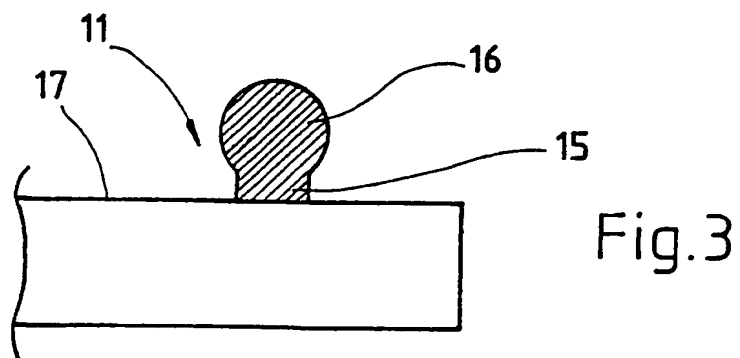
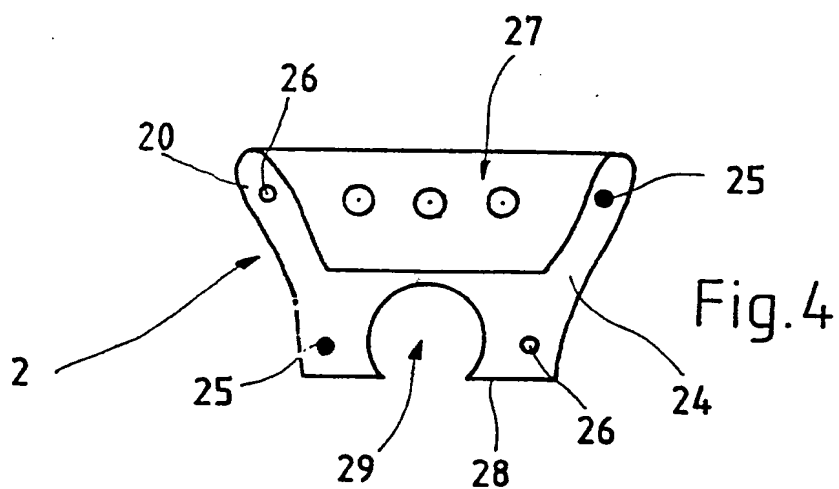
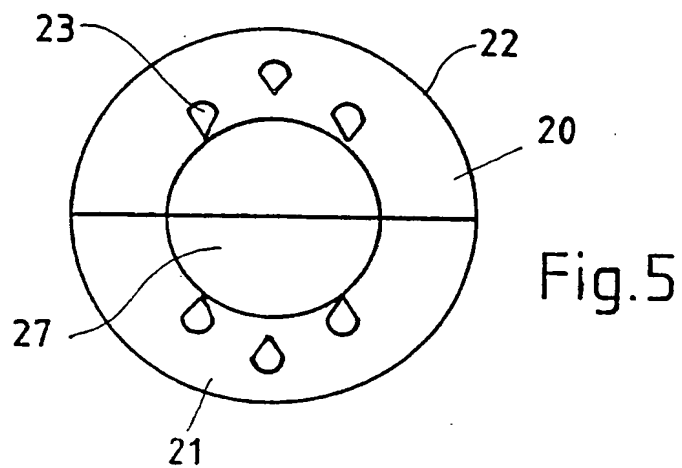
12. Mouth space hygiene equipment, after or several before working requirements, by the fact characterized that the flexible material (6) when Microfasertuch, textile tissue or bristle carrier fabric are trained, whereby the flexible material (6) is soaked with mouth raumpflege raumpflege-oder a reinigungsfluessigkeit if necessary also.

13. Use of mouth space hygiene equipment, in particular after or several of the preceding requirements for the cleaning of the mouth space inner surfaces, in particular the tongue.

14. Use of a Microfasertuches, in particular at mouth space hygiene equipment after or several of the preceding requirements for the cleaning of the tongue.







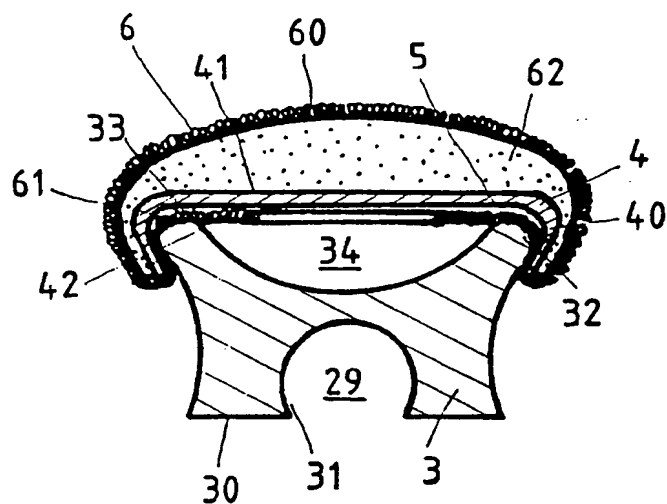


Fig.6

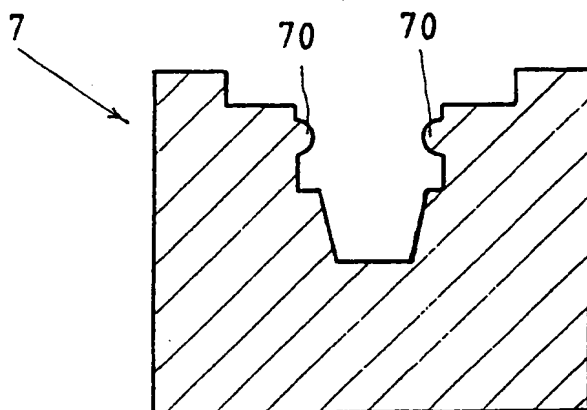


Fig.7

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